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Craig A. Slavin  
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AF/ 3711

**PATENT**

Docket No. 380112-141

**Applicant:** Cheng

**Serial No.:** 09/602,049

**Filing Date:** June 23, 2000

**Title:** Golf Club Shaft Having Multiple Metal Fiber Layers

**Group Art Unit:** 3711

**Examiner:** Blau

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Mail Stop Appeal Brief – Patent**

### TRANSMITTAL OF APPEAL BRIEF

Further to the Notice of Appeal filed February 13, 2004, transmitted herewith in triplicate is the Appeal Brief, time for filing of which has been extended by the enclosed petition to July 13, 2004. Pursuant to 37 C.F.R. § 1.17(c), enclosed is a check in the amount of \$165 to cover the filing fee for the Appeal Brief.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-0638. Should such fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

7/13/04  
Date

Respectfully submitted,

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**Mail Stop – Appeal Brief Patent**

**APPEAL BRIEF**

**I. REAL PARTY IN INTEREST**

The real party in interest in the present appeal is Harrison Sports, Inc., the assignee of the present application.

**II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences which will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the present appeal.

**III. STATUS OF THE CLAIMS**

Claims 1, 3, 5-15, 17, 19-32 and 35-41 are pending and are set forth in the Appendix (Exhibit 1).

Claims 2, 4, 16, 18, 33, 34 and 42-47 have been canceled.

Claims 1, 3, 5-15, 17, 19-32 and 35-37 have been allowed.

Claims 38 and 40-41 have been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of U.S. Patent No. 5,279,879 to Takezawa ("the Takezawa patent"), U.S. Patent No. 6,273,830 to Takemura ("the Takemura patent") and U.S. Patent No. 5,049,422 to Honma ("the Honma patent"). Claim 39 has been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the Takezawa patent, the Takemura patent, the Honma patent and U.S. Patent No. 5,385,767 to Noguchi patent ("the Noguchi patent").

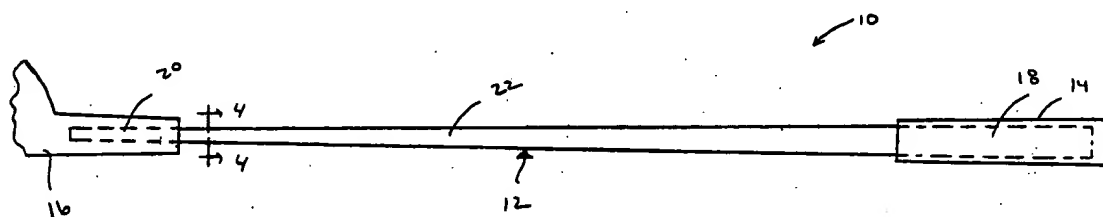
Applicant appeals the rejections of claims 38-41.

#### IV. STATUS OF THE AMENDMENTS

No amendments were filed after the Office Action dated November 14, 2003.

#### V. SUMMARY OF THE INVENTIONS

Referring first to Figure 1, which is reproduced below, one example of a golf club shaft in accordance with the present inventions includes a plurality of fiber reinforced resin layers that define a tip, a tip section 20, a main body section 22, a grip section 18, a butt and a longitudinal axis. [Specification at page 4, lines 6-21.]



**Figure 1 of the Present Application**

Turning to Figure 10, which is reproduced on the following page,<sup>1</sup> one exemplary implementation of the golf club shaft defined by independent claim 38 includes an inner

scrim cloth 36b over the fiber reinforced resin layers (note fiber reinforced resin layer groups 24, 26, 28), an outer scrim cloth 46, and a plurality of longitudinally extending metal fibers 36a located between the inner and outer scrim cloths 36b and 46. [See, also, the specification at page 6, lines 12-14 and page 8, lines 5-13.] As is known to those of skill in the art, scrim cloth is a specific type of pre-impregnated fiberglass sheet that includes woven fibers that cross over one another to form the cloth within the resin.

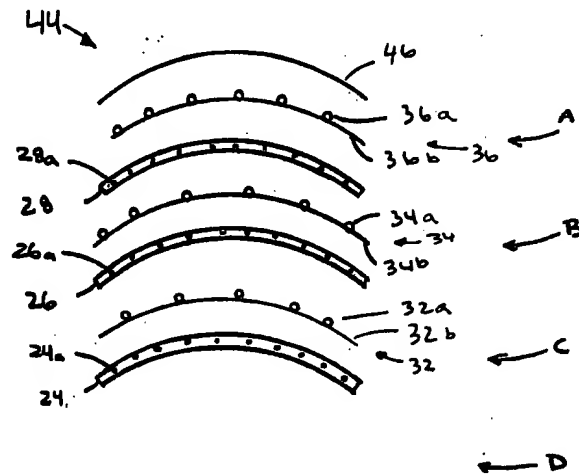


Figure 10 of the Present Application

## VI. ISSUES

The present appeal presents two issues:

(1) whether, in accordance with 35 U.S.C. § 103, claims 38, 40 and 41 have been properly rejected as being unpatentable over the combined teachings of the Takezawa, Takemura and Honma patents.

(2) whether, in accordance with 35 U.S.C. § 103, claim 39 has been properly rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the Takezawa, Takemura, Honma and Noguchi patents.

<sup>1</sup> Applicant notes that Figure 10 was corrected in the amendment filed on December 7, 2002, and that the corrected version of claim 10 is presented here.

## VII. GROUPING OF THE CLAIMS

Claims 38-41 stand or fall together.

## VIII. ARGUMENTS

### A. The Cited Patents

The Takezawa patent discloses a variety of hybrid prepreg sheets that may be incorporated into golf clubs. The hybrid prepreg sheet illustrated in Figure 3 is formed from two fiber reinforced sheets 4A and 4B, which include **unidirectional** carbon (or glass) reinforcing fibers 2, and a plurality of unidirectional foreign fibers 6 that are positioned between the fiber reinforced sheets. [Column 5, line 37 to column 6, line 34.] The Takezawa patent indicates that the foreign fibers 6 may be metal fibers. Referring to Figure 20 and column 22, lines 12-47, for example, the golf club shafts include a plurality of conventional carbon fiber reinforced prepreg sheets in conjunction with one of the hybrid prepreg sheets.

The Takemura patent discloses shafts including a number of conventional fiber reinforced resin layers. The fibers within each Takemura layer are unidirectional.

The Honma patent discloses a shaft with metal fibers 15 that are placed over a sheet of resin impregnated glass cloth 13. The Honma patent also specifically states that the **metal fibers are covered by a carbon fiber sheet**. [Column 3, lines 33-35.]

The Noguchi patent discloses a shaft with a transparent outer layer.

### B. The Cited References Do Not Teach Or Suggest The Claimed Combination

The golf club shaft defined by independent claim 38 includes specific materials in a specific arrangement. To that end, the claimed golf club shaft includes a plurality of fiber reinforced resin layers, an **inner scrim cloth** over the fiber reinforced resin layers, an **outer scrim cloth** and a plurality of longitudinally extending **metal fibers located**

**between the inner and outer scrim cloths.** [As noted above, scrim cloth includes **woven fibers** that cross over one another to form the cloth within the resin.] The cited references fail to teach or suggest such a combination. Most notably, the cited references fail to teach or even remotely suggest the claimed **outer** scrim cloth.

As tacitly admitted in the last line of page 2 of the November 14, 2003 Office Action ("the Office Action"), the Takezawa patent fails to teach or suggest the use of any scrim cloth at all, let alone inner and outer scrim cloths with metal fibers therebetween, as is called for in independent claim 38. The Office Action has taken the position that because the Honma patent discloses the use of a **single** resin impregnated glass cloth over which metal fibers are placed, it would have been obvious to replace **both** of the Takezawa unidirectional carbon fiber reinforced sheets with "scrim cloth." Even assuming that the Honma resin impregnated glass cloth is "scrim cloth," and that there was some reason to combine the references in the manner proposed in the Office Action, the resulting combination of references would not have produced a shaft with inner and outer scrim cloths and metal fibers therebetween. There simply is no outer scrim cloth disclosed in either patent and the Examiner has completely disregarded what the Honma patent actually teaches, i.e. that the Honma metal fibers are covered by a carbon fiber sheet, not scrim cloth. In other words, the Honma patent discloses the use of the same outer layer as the Takezawa patent.

The Takemura patent, which has been cited for its purported teachings concerning various shaft sections, fails to remedy the above-identified deficiencies in the Takezawa and Honma patents.

**C. The Office Action's Hindsight Attempt To Replicate The Claimed Combination Failed To Do So**

Given the shortcomings in the cited references, the Office Action has based the rejection on the conclusory statement that it would have been obvious to replace the Takezawa inner and outer carbon fiber reinforced sheets with inner and outer scrim cloths "in order to utilize a fiberglass prepreg known in the art." [Office Action at page 3.]

Referring to pages 4 and 5 of the Office Action, the inspiration for this conclusory statement appears to be as follows:

- (1) The Takezawa patent discloses that a glass fiber reinforced resin pre-impregnated sheet may be used in place of a carbon fiber reinforced resin pre-impregnated sheet that surrounds metal fibers.
- (2) The Honma patent discloses that scrim cloth is a "suitable type of glass fiber resin pre-impregnated sheet" that is "available in the marketplace."
- (3) A skilled artisan would have positioned an "available" and "suitable" glass fiber resin pre-impregnated sheet around the metal fibers in the Takezawa shaft.
- (4) If the suitable type of glass fiber reinforced resin pre-impregnated sheet selected by the skilled artisan just happened to be scrim cloth, then the outer layer of the Takezawa shaft would be scrim cloth instead of the disclosed unidirectional carbon (or glass) fiber reinforced sheet.

The impropriety of this hindsight attempt to replicate the claimed combination is discussed below.

Referring first to point (1), the sheets disclosed in the Takezawa patent have unidirectional fibers, whether they be glass or carbon, and such sheets are only related to scrim cloth, which includes **woven fibers** that cross over one another to form the **cloth** within the resin, to the extent that both are reinforced resin sheets. The fact that the Takezawa patent teaches unidirectional glass fibers may be used in place of unidirectional carbon fibers is irrelevant to the issues at hand.

Turning to point (2), what the Honma patent actually teaches is an arrangement whereby metal fibers are located between scrim cloth and **a carbon fiber reinforced sheet**. Thus, while the Honma patent does in fact teach that scrim cloth may be used under the metal fibers, the Honma patent also specifically teaches that something else (i.e. a carbon fiber reinforced sheet), is placed over the metal fibers. To that end, it is noteworthy that the Office Action states that "Honma was used to show that it is known to make fiber glass sheets as [sic] scrim cloth when placing near a metal fiber." This statement is respectfully traversed. **The Honma patent does not include any generic "place scrim cloth near a metal fiber teaching."** Instead, the Honma patent discloses a specific hybrid "metal fiber and carbon fiber" prepreg that consists of the scrim cloth, the metal fibers, and a fiber reinforced sheet. [Column 3, lines 28-35.] Whether the fibers in

the outer sheet are carbon, as disclosed, or fiberglass is irrelevant. The outer sheet simply is not “scrim cloth,” which is a sheet with **woven fibers** that cross over one another to form the cloth within the resin.

Finally, in points (3) and (4), the Office Action asserts that a skilled artisan would have positioned an “available” and “suitable” glass fiber resin pre-impregnated sheet around metal fibers in the Takezawa shaft and, if by some coincidence that sheet happened to be scrim cloth, then the claimed invention would be realized. This assertion begs the obvious question – what is “suitable” for placement **over** the metal fibers in the Takezawa shaft? Applicant respectfully submits that there is nothing in the cited references which even remotely suggests that scrim cloth is “suitable” for placement **over** metal fibers which are themselves over a scrim cloth. The Takezawa and Honma patents, for example, both indicate that unidirectional fiber reinforced resin pre-impregnated sheets are “suitable” for placement over metal fibers. The only suggestion that scrim cloth is “suitable” for positioning both under and over metal fibers comes from the present application.

**D. The Office Action Failed To Employ The Proper Standard For Establishing A *Prima Facie* Case Of Obviousness Under 35 U.S.C. § 103**

With respect to the legal standard upon which patentability under 35 U.S.C. § 103 is evaluated, *In re Kotzab*, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000), provides a fairly succinct summary of the standard adhered to by the Federal Circuit:

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one “to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.” Most if not all inventions arise from a combination of old elements. Thus, every element of a claimed invention may often be found in the prior art. However, ***identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish***



obviousness based on a combination of the elements disclosed in the prior art, ***there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant.*** Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference.

[Citations emitted, emphasis added.] The *Kotzab* decision is also cited in Section 2143.01 of the Manual of Patent Examining Procedure.

The outstanding Office Action completely ignores the objective standard for evaluating patentability set forth by the Federal Circuit. Instead, the Office Action engages in an *ex post facto* attempt to jump from a golf club shaft does not include scrim cloth at all, to one that includes inner and outer scrim cloths, by way of a shaft that includes an inner scrim cloth and an outer sheet that is not scrim cloth. In other words, although the Office Action has identified individual parts of the invention, i.e. the underlying fiber reinforced resin layers, metal fibers and scrim cloth, it has utterly failed to provide the requisite teaching to assemble the underlying fiber reinforced resin layers, metal fibers and scrim cloth in the specific arrangement recited in independent claim 38.

As the cited references fail to teach or suggest the combination of elements recited in independent claim 38, whether viewed alone or in combination, applicant respectfully submits that the rejection of claims 38, 40 and 41 under 35 U.S.C. § 103 is improper and should be reversed.

Turning to claim 39, the Noguchi patent fails to remedy the deficiencies in the, Takezawa, Honma and Takemura patents with respect to independent claim 38. As such, claim 39 is patentable for at least the same reasons as claim 38 and the rejection of claim 39 under 35 U.S.C. § 103 should also be reversed.

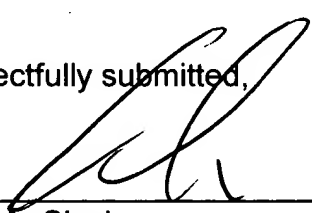
**IX. CONCLUDING REMARKS**

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-0638. Should such fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

7/13/07  
Date

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Respectfully submitted,

  
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**APPENDIX FOR APPEAL CONCERNING  
U.S. APPLICATION SERIAL NO. 09/602,049**

1. A golf club shaft, comprising:
  - a plurality of fiber reinforced resin layers defining a tip, a tip section, a main body section, a grip section, and a butt;
  - a plurality of first metal fibers, defining a first length and longitudinal ends, located between two of the fiber reinforced resin layers such that one of the longitudinal ends of each of the first metal fibers is substantially aligned with the tip;
  - a plurality of second metal fibers, defining a second length and longitudinal ends, located between two of the fiber reinforced resin layers such that one of the longitudinal ends of each of the second metal fibers is substantially aligned with the tip, the second length being greater than the first length;
  - an inner scrim cloth; and
  - an outer-most scrim cloth;wherein one of the plurality of first metal fibers and the plurality of second metal fibers is located between the inner and out-most scrim cloths.

3. A golf club shaft as claimed in claim 1, wherein the plurality of fiber reinforced resin layers includes a group of layers with fibers angled with respect to the longitudinal axis of the shaft and a group of layers with fibers substantially parallel to the longitudinal axis.

5. A golf club shaft as claimed in claim 1, wherein the first metal fibers comprise relatively heavy metal fibers.

6. A golf club shaft as claimed in claim 5, wherein the first metal fibers comprise tungsten fibers.

7. A golf club shaft as claimed in claim 5, wherein the first metal fibers are about 5 inches to about 8 inches in length.

8. A golf club shaft as claimed in claim 1, wherein the second metal fibers comprise relatively stiff metal fibers.

9. A golf club shaft as claimed in claim 8, wherein the second metal fibers comprise boron fibers.

10. A golf club shaft as claimed in claim 8, wherein the second metal fibers are about 10 inches to about 16 inches in length.

11. A golf club shaft as claimed in claim 1, further comprising:  
a plurality of third metal fibers defining a third length located between two of the fiber reinforced resin layers, the third length being greater than the second length.

12. A golf club shaft as claimed in claim 11, wherein the third metal fibers comprise relatively resilient metal fibers.

13. A golf club shaft as claimed in claim 12, wherein the third metal fibers comprise titanium fibers.

14. A golf club shaft as claimed in claim 12, wherein the third metal fibers are at least about 20 inches in length.

15. A golf club shaft as claimed in claim 1, wherein the first and second metal fibers are substantially linear.

17. A golf club shaft as claimed in claim 1, wherein the first and second metal fibers are located between the same two resin layers.

19. A golf club shaft, comprising:

- a plurality of resin layers defining a tip, a tip section, a main body section, a grip section, and a butt, at least one of the resin layers being a fiber reinforced resin layer;
- an inner scrim cloth over the plurality of resin layers;
- an outer-most scrim cloth;
- a plurality of first metal fibers located between two of the resin layers and defining a first length; and

a plurality of second metal fibers located between the inner scrim cloth and the outer-most scrim cloth, the second metal fibers being formed from a different metal than the first metal fibers and defining a second length that is greater than the first length.

20. A golf club shaft as claimed in claim 19, wherein a plurality of the resin layers are fiber reinforced resin layers.

21. A golf club shaft as claimed in claim 20, wherein the plurality of fiber reinforced resin layers includes a group of layers with fibers angled with respect to the longitudinal axis of the shaft and a group of layers with fibers substantially parallel to the longitudinal axis.

22. A golf club shaft as claimed in claim 19, wherein the first metal fibers comprise relatively heavy metal fibers.

23. A golf club shaft as claimed in claim 22, wherein the first metal fibers comprise tungsten fibers.

24. A golf club shaft as claimed in claim 19, wherein the second metal fibers comprise relatively stiff metal fibers.

25. A golf club shaft as claimed in claim 24, wherein the second metal fibers comprise boron fibers.

26. A golf club shaft as claimed in claim 19, further comprising:  
a plurality of third metal fibers located between two of the resin layers, the third metal fibers being formed from a different metal than the first and second metal fibers.

27. A golf club shaft as claimed in claim 26, wherein the third metal fibers comprise relatively resilient metal fibers.

28. A golf club shaft as claimed in claim 27, wherein the third metal fibers comprise titanium fibers.

29. A golf club shaft as claimed in claim 26, wherein the first metal fibers comprise relatively heavy metal fibers, the second metal fibers comprise relatively stiff metal fibers, and the third metal fibers comprise relatively resilient metal fibers.

30. A golf club shaft as claimed in claim 29, wherein the third metal fibers define a third length and the third length is greater than the second length.

31. A golf club shaft as claimed in claim 19, wherein the first and second metal fibers are substantially linear.

32. A golf club shaft as claimed in claim 19, wherein the first and second metal fibers are located between the same two resin layers.

35. A golf club shaft, comprising:  
a plurality of fiber reinforced resin layers defining a tip, a tip section, a main body section, a grip section, and a butt; and

a plurality of relatively heavy metal fibers extending from the tip towards the butt, defining a first length and located between two of the fiber reinforced resin layers;

a plurality of relatively stiff metal fibers extending from the tip towards the butt, defining a second length and located between two of the fiber reinforced resin layers, the second length being greater than the first length; and

a plurality of relatively resilient metal fibers extending from the tip towards the butt, defining a third length and located between two of the fiber reinforced resin layers, the third length being greater than the second length;

wherein at least one of the plurality of relatively heavy metal fibers, the plurality of relatively stiff metal fibers, and the plurality of relatively resilient metal fibers is located between a different two of the fiber reinforced resin layers than the other of the plurality of relatively heavy metal fibers, the plurality of relatively stiff metal fibers, and the plurality of relatively resilient metal fibers.



36. A golf club shaft as claimed in claim 1, wherein metal fibers are visible through the outer-most scrim cloth.

37. A golf club shaft as claimed in claim 19, wherein metal fibers are visible through the outer-most scrim cloth.

38. A golf club shaft, comprising:  
a plurality of fiber reinforced resin layers defining a tip, a tip section, a main body section, a grip section, a butt and a longitudinal axis;  
an inner scrim cloth over the fiber reinforced resin layers;  
an outer scrim cloth; and  
a plurality of longitudinally extending metal fibers located between the inner and outer scrim cloths.

39. A golf club shaft as claimed in claim 38, wherein the metal fiber layers are visible through the outer scrim cloth.

40. A golf club shaft as claimed in claim 38, wherein the metal fibers are substantially parallel to the longitudinal axis.

41. A golf club shaft as claimed in claim 38, wherein the metal fibers are the only structures between the inner and outer scrim cloths.